

**REMARKS**

The acknowledgement, in the Office Action, of a claim for foreign priority under 35 U.S.C. § 119(a)-(d), and that the certified copy of the priority document has been received, is noted with appreciation.

Claims 1-3, 6-8, 10-18, 20, 23, and 24 were pending in the application. By this Amendment, claim 3 is cancelled and new claims 25-39 are added. The status of the claims is as follows:

Claims 4, 5, 9, 19, 21, and 22 are withdrawn from consideration.

Claims 1, 2, 11, and 16 are rejected under 35 U.S.C. § 102(a) as being anticipated by Self Calibrating Logarithmic CMOS Image Sensor with Single Chip Camera Functionality to M. Loose, et al. ("Moose").

Claims 6-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moose in view of U.S. Patent No. 6,512,543 to Kuroda ("Kuroda").

Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Moose in view of U.S. Patent No. 6,323,479 to Hyneczek ("Hyneczek").

Claims 17, 18, 20, 23, and 24 are allowed.

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

To date, no Notice of Draftsperson's Patent Drawing Review has been received. Applicant respectfully requests receipt of this document when it becomes available. Please note that the original drawings filed in the patent application are "formal" drawings.

Claim 1 has been amended to incorporate the limitation of claim 3. These changes do not introduce any new matter. Original dependent claims 10 and 12 have been amended to become independent claims. These changes do not introduce any new matter.

The allowance of claims 17, 18, 20, 23, and 24, by the Examiner, is noted with appreciation.

The objection to claim 10 as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, is noted with appreciation. Claim 10 have been rewritten in independent form, including all of the limitations of the base claim and any intervening claims, as suggested by the Examiner. Accordingly, it is respectfully requested that the objection to claim 10 as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, be reconsidered and withdrawn.

The objection to claim 12 as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, is noted with appreciation. Claim 12 has been rewritten in independent form, including all of the limitations of the base claim and any intervening claims, as suggested by the Examiner. Accordingly, it is respectfully requested that the objection to claim 12 as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, be reconsidered and withdrawn. Claims 13 and 15 depend from claim 12. As claim 12 is allowable, claims 13 and 15 are allowable for at least the same reasons.

**35 U.S.C. § 102(a) Rejection**

The rejection of claims 1, 2, 11, and 16 under 35 U.S.C. § 102(a) as being anticipated by Moose, is respectfully traversed based on the following.

Amended claim 1 requires that each pixel include an integrator circuit for integrating the electric signal outputted by the photoelectric conversion portion, the electric signal being natural-logarithmically converted. In contrast, Moose does not disclose a pixel-level integrator used in conjunction with a natural-logarithmically converted electric signal. Paragraph 2 of the Introduction to Moose discloses the use correlated double sampling when integrating linear receptors, not logarithmic receptors. Therefore, because Moose does not disclose an integrator circuit in conjunction with natural-logarithmically conversion, Moose cannot anticipate claim 1.

Claims 2, 11, and 16 depend from claim 1. As claim 1 is considered unanticipated, claims 2, 11, and 16 are considered unanticipated for at least the same reasons. Furthermore, at least claim 16 includes an additional limitation that is not disclosed by Moose. Claim 16 requires the controller to detect variations in sensitivity when the photoelectric conversion portions are kept in a dark state. The Office Action indicates that section 3.1 Photoreceptor Response discloses the controller detecting variations when the photoelectric conversion portions are kept in a dark state. In fact, this section describes and shows only the output of the photoelectric conversion portions. Moose provides no information as to what light intensity level is used when detecting variations in sensitivity, and thus Moose cannot anticipate claim 16 for at least this additional reason.

Accordingly, it is respectfully requested that the rejection of claims 1, 2, 11, and 16 under 35 U.S.C. § 102(a) as being anticipated by Moose, be reconsidered and withdrawn.

**35 U.S.C. § 103(a) Rejections**

The rejection of claims 6-8 under 35 U.S.C. § 103(a), as being unpatentable over Moose in view of Kuroda, is respectfully traversed based on the following.

As discussed above, Moose does not anticipate claim 1 because Moose does not disclose at least the use of an integrator circuit in conjunction with natural-logarithmically converting the electric signal. Further, the combination of Moose and Kuroda similarly does not disclose at least this limitation of claim 1. Kuroda discloses a photoelectric conversion/storage section, but provides virtually no detail as to how this section operates, what its components are, etc. Thus, there is no way of knowing whether Kuroda's photoelectric conversion/storage section is linear or logarithmic and there is no way of knowing if it includes an integrator circuit. Therefore, without more explicit disclosure, the combination of Moose and Kuroda does not disclose or suggest each limitation of claim 1, and thus cannot render obvious the invention of claim 1. Claims 6-8 depend, either directly or indirectly from claim 1. As claim 1 is considered nonobvious over the combination of Moose and Kuroda, claims 6-8 are considered nonobvious for at least the same reasons.

Accordingly, it is respectfully requested that the rejection of claims 6-8 under 35 U.S.C. § 103(a) as being unpatentable over Moose in view of Kuroda, be reconsidered and withdrawn.

The rejection of claim 14 under 35 U.S.C. § 103(a), as being unpatentable over Moose in view of Hynecek, is respectfully traversed based on the following.

As discussed above, Moose does not anticipate claim 1 because Moose does not disclose at least the use of an integrator circuit in conjunction with natural-logarithmically converting the electric signal. Further, the combination of Moose and Hynecek similarly does not disclose at least this limitation of claim 1. Hynecek discloses a photon detecting element that may be biased in one of two ways, first provides a linear response, the second

provides a logarithmic response. However, Hynecek does not disclose an integrating circuit between the photon detecting element and a readout circuit. Similarly, the prior art found in Hynecek and illustrated in FIGs. 7-10 does not disclose the use of natural-logarithmically converting the electric signal in conjunction with an integrating circuit, see col. 1, lines 18-56. Thus, the combination of Moose and Hynecek does not disclose or suggest each limitation of claim 1, and thus cannot render obvious the invention of claim 1. Claim 14 depends from claim 1. As claim 1 is considered nonobvious over the combination of Moose and Hynecek, claim 14 is considered nonobvious for at least the same reasons.

Accordingly, it is respectfully requested that the rejection of claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Moose in view of Hynecek, be reconsidered and withdrawn.

#### **New Claims**

By this Amendment, new claims 25-39 are added. Claim 25 corresponds to original claim 1, with the addition of an integrator circuit having a specified configuration. An example integrator circuit having this configuration is illustrated in FIG. 3 of the present Application and described on page 13, line 10 through page 14, line 7. Therefore, claim 25 introduces no new matter. Claim 26 includes a transistor for selectively connecting and disconnecting the electric signal to and from the output signal line. An example of such a transistor is T5 in FIG. 3 of the present Application, which is described on page 13, line 10 through page 14, line 7. Therefore, claim 26 introduces no new matter. Claim 27 includes a transistor for amplifying the electric signal output from the photoelectric signal portion. An example of such a transistor is T6 in FIG. 8 of the present Application, which is described on page 22, line 23 through page 23, line 9. Therefore, claim 27 introduces no new matter. Claim 28 includes a load resistor or a constant current source connected to the output signal line. An example of such a load resistor or constant current source is Q1 in FIG. 6 of the present Application, which is described on page 20, line 20 through page 21, line 12. Therefore, claim 28 introduces no new matter. Claim 29

provides for the photoelectric conversion portion to selectively operate in either linear or natural-logarithmic conversion modes. Selective operation in these two modes is described in the present Application on page 15, line 4 through page 19, line 13. Therefore, claim 29 introduces no new matter.

Claim 30 corresponds to original claim 1, but provides additional limitations on the photoelectric conversion portion such as the inclusion of a transistor having a specified configuration. An example of this photoelectric conversion portion including a transistor T1 is illustrated in FIG. 3 of the present Application and is described on page 10, lines 5-18. Therefore, claim 30 introduces no new matter. Claims 31-34 correspond to claims 26-29 and introduce no new matter as noted above.

Claim 35 corresponds to original claim 1, but provides for the additional limitations of claims 25 and 30, i.e., an integrator circuit and additional limitations on the photoelectric conversion portion. Therefore, claim 35 introduces no new matter. Claims 36-39 correspond to claims 26-29 and introduce no new matter as noted above.

With respect to claim 25, the cited references of Moose, Kuroda, and Hynecek do not disclose or suggest an image-sensing apparatus having the required elements and configuration. For this reason, claim 25 is nonobvious over Moose, Kuroda, and Hynecek. Claims 26-29 depend from claim 25. As claim 25 is nonobvious over Moose, Kuroda, and Hynecek, claims 26-29 are nonobvious for at least the same reasons.

With respect to claim 30, the cited references of Moose, Kuroda, and Hynecek do not disclose or suggest an image-sensing apparatus having the required elements and configuration. For this reason, claim 30 is nonobvious over Moose, Kuroda, and Hynecek. Claims 31-34 depend from claim 30. As claim 30 is nonobvious over Moose, Kuroda, and Hynecek, claims 31-34 are nonobvious for at least the same reasons.

With respect to claim 35, the cited references of Moose, Kuroda, and Hynecek do not disclose or suggest an image-sensing apparatus having the required elements and

configuration. For this reason, claim 35 is nonobvious over Moose, Kuroda, and Hynecek. Claims 36-39 depend from claim 35. As claim 35 is nonobvious over Moose, Kuroda, and Hynecek, claims 36-39 are nonobvious for at least the same reasons.

### **CONCLUSION**

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment increases the number of independent claims by 5 from 2 to 7 (3 previously paid for) and increases the total number of claims by 14 from 24 to 38, but does not present any multiple dependency claims. Accordingly, a Response Transmittal and Fee Authorization form authorizing the amount of \$424.00 to be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260 is enclosed herewith in duplicate. However, if the Response Transmittal and Fee Authorization form is missing, insufficient, or otherwise inadequate, or if a fee, other than the issue fee, is required during the pendency of this application, please charge such fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee,

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and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's  
Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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